

THE announcement is made in *Engineering* that Mr. Yarrow has placed at the disposal of the council of the Institution of Civil Engineers the sum of 10,000*l.* to be applied to the education of necessitous members of the engineering profession. It is pointed out that the engineering industry of the country will benefit from this help to technical education. The old system of premium apprenticeship is passing away, and it is coming to be recognised that the prosperity of any manufacturing nation rests on engineering, and that a foundation for the commercial success of a country cannot be maintained without the aid of a body of scientific engineers. The era of happy-thought invention is fast passing, and the opportunity for original work must chiefly depend on the application of science to perfecting known principles. Gratitude should, therefore, be felt for the public spirit which has placed in the hands of the Institution of Civil Engineers the means of giving a better training to a class that has had few opportunities in the past.

THE foundation-stone of the new buildings of University College, Reading, was laid on June 6 by Lord Goschen, Chancellor of the University of Oxford. The freehold of the new buildings is a gift to the college by Mr. Alfred Palmer. The erection of the college hall and the buildings for the practical study of various branches of pure and applied science will be undertaken immediately, but substantial additions must be made to the building fund before the scheme as a whole can be carried out. At the luncheon following the ceremony, Mr. W. M. Childs, the principal of the college, said the day would be memorable in the annals of the college because of a splendid benefaction. Throughout its history the college had been exposed to peril by the absence of endowment. He then announced that Mr. George William Palmer had informed the president of the college of his intention to offer a sum of 50,000*l.* as a permanent endowment fund, to be called "The George Palmer Endowment Fund." In a letter to the president announcing his intention, Mr. Palmer said:—"My intention is to provide that the capital fund of the endowment shall not be applied to the erection of buildings, but shall be permanently invested, and that the income shall be applied to the educational work of the college. I also desire to make it a condition of my gift that the college shall maintain its *status* as a university college in the town of Reading, and that it shall always give higher teaching in literature and in science, and, further, that it shall carry on evening classes, open at moderate fees to those engaged in earning their living during the day-time." Lord Goschen, in the course of a few remarks, referred to the direct missionary work which had been conducted by the old universities through the university extension lecturers. They were, he said, the missionaries of culture throughout a great part of our islands, and they had carried the flag of culture into many a town. A great variety of subjects is now taught in the college, but all that is taught, said Lord Goschen, is taught in a thorough, academic, and scientific manner. It is for the professors to see that the cause of culture, the cause of scientific study, shall not be neglected in these days. "Amid the hustling of those who champion various causes," continued Lord Goschen, "may I at least put in a word for higher culture? May I echo what Mr. George William Palmer has written, that literature and science may hold their own in this country apart from useful knowledge?" The president of the college announced that 80,000*l.* is required for the building fund, and of that sum 35,700*l.* has been subscribed.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 11.—"On the Resemblances existing between the 'Plummer's Bodies' of Malignant Growths, and Certain Normal Constituents of Reproductive Cells of Animals." By Prof. J. Bretland Farmer, F.R.S., J. E. S. Moore, and C. E. Walker.

The authors, continuing their investigations on malignant growths, have examined the so-called "Plummer's Bodies" of cancer cells in connection with the cytological changes that occur in cancer and in reproductive cells respectively.

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The "Plummer's Bodies" are found in many cancerous growths, and are most commonly encountered in the younger or growing regions of the tumour. They appear in the form of vesicles, and they consist essentially of a fairly well defined wall containing a clear space in which is suspended a small darkly staining granule (Figs. 1 and 2). They are most commonly to be met with in

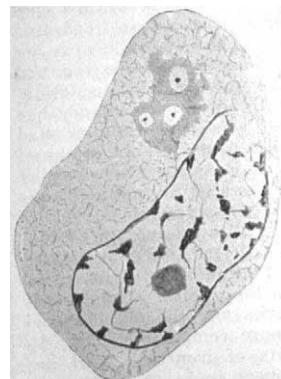


FIG. 1.

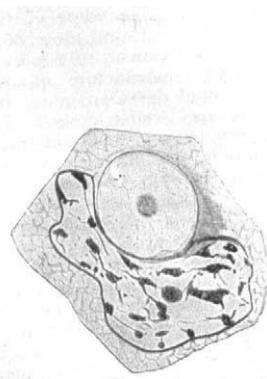


FIG. 2.

FIGS. 1 and 2.—Examples of "Plummer's Bodies" from carcinoma. 1. Three small "Bodies" in an archoplasm. 2. Later stage in the development of the "Bodies."

tumours of a glandular or glandular-epithelial origin. They lie in the cytoplasm of the cancer cell, and usually in close proximity to the nucleus. In size, they vary from excessive minuteness to that of the nucleus itself.

The special interest attaching to them depends on the fact that they have commonly been regarded as peculiar to cancerous cells, although Honda believes he has occasionally also encountered them in inflammatory tissues. They have been variously interpreted. Some investigators have regarded them as parasitic organisms, more or less intimately connected with the etiology of the disease, whilst others have seen in them a differentiation of the cytoplasm of the cancerous cell itself. It has been suggested also that they might be derived from the centrosomes within the archoplasm, but the observations of Benda that centrosomes coexisted independently of them in the cell have rightly been held to disprove this hypothesis.

The authors' investigations indicate, however, that there are good grounds for re-considering the whole position, and a comparison of the processes that normally obtain during the final stages of development of the reproductive elements in man and the other mammalia appears strongly to suggest that a parallel between the "Plummer Bodies" of cancer and certain vesicular structures occurring regularly in the gametogenic, but not in the ordinary somatic, cells, may be found to hold good.

It was shown in 1895 that during the prophase of the heterotype (first meiotic) mitosis of the spermatogenetic cells, the archoplasm undergoes a highly characteristic and peculiar metamorphosis. In normal somatic, or pre-meiotic, cells, the archoplasm is seen to lie beside the nucleus as a dusky mass of protoplasm in which are con-

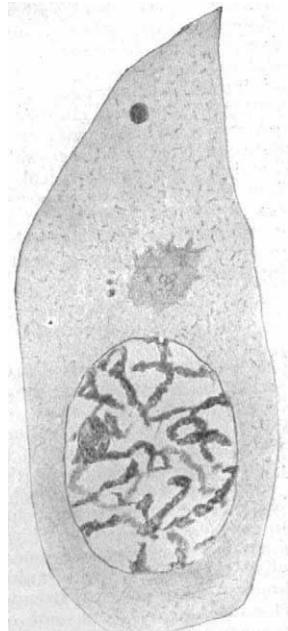


FIG. 3.—Archoplasm with centrosomes lying outside it in prophase of the first meiotic division in testis of mouse.

tained the centrosomes. That is, the attraction sphere consists of the archoplasm *plus* the centrosomes.

But during the prophase of the heterotype mitosis these constituents become separated. The centrosomes are found to lie *outside of*, and detached from, the archoplasm (Fig. 3). At the same time the archoplasm itself undergoes a change. It becomes vesiculated, and finally, at the close of this cell generation, it is lost in the general cytoplasm of the daughter cells.

In the prophase of the second maiotic division (homotype) the same phenomena recur. When the homotype mitosis is over, the constituents of the sphere, or at least some of them, enter into direct relation with parts of the

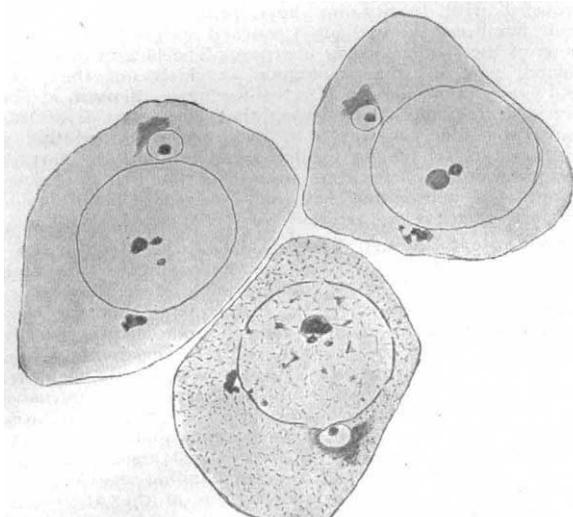


FIG. 4.

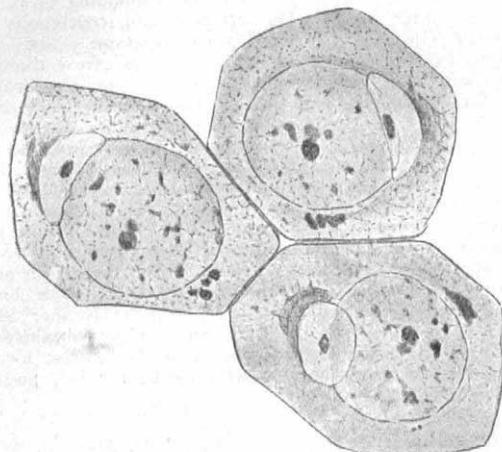


FIG. 5.

FIGS. 4 and 5.—Later stages in the development of the spermatid of mouse.

spermatozoon which arises by further differentiation of the cell. As regards the archoplasm, it is again seen to contain a number of minute vesicles which continue as before to grow in size, whilst each contains a single refractive and stainable granule (Fig. 3). Subsequently, several of these vesicles fuse together, so that at a later stage in the metamorphosis of the cell into a spermatozoon there only remains a single large clear body, bounded by a distinct membrane, containing in the centre one or more darkly staining granules (Figs. 4, 5, 6).

This body, originally described in 1895 as the archoplasmic vesicle, is a very conspicuous and apparently constant feature peculiar to the spermatogenetic cells of, at any rate, the Vertebrata, and it has since been encountered beyond the limits of that group.

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When fully developed it often assumes a size approximating to that of the nucleus. Indeed, the latter is often deformed and made to assume a crescentic or cup-like shape owing to the enlargement of the adjacent archoplasmic vesicle. The vesicle and its contents ultimately form the so-called "cephalic cap" of the spermatozoon.

The remarkable similarity between the structure just described and those known as "Plimner's Bodies" will have become obvious. It is not, perhaps, accidental that just as in the case of nuclear divisions, so also in the cellular inclusions, a parallelism between the cells of reproductive tissues and of cancer cells should be found to exist. But the cells of cancer are not therefore regarded as *identical* with those of the sexual cells, as was carefully pointed out in the first communication of the authors in 1903.

But the resemblances between what have been termed gametoid and the true gametogenic cells now seem to be even more significant than they appeared to be at that time. Both classes of cells are autonomous to a very high degree, and both possess the faculty of continuous or intermittent multiplication independently of the tissue requirements of the organism. And finally, both exhibit cellular and nuclear metamorphoses which not only, *mutatis mutandis*, resemble one another, but differ materially from those pertaining to the normal somatic cells.

It is possible that the malignant elements are the outcome of a phylogenetic reversion, but the matter is obscured by the disturbing influences that have been operative during the actual ontogeny of the cells and tissues from which these elements have sprung. If this be so, the connection apparent between gametoid and the true reproductive cells will acquire a still deeper significance; the full discussion of this question is reserved for another occasion.

May 18.—"The Atomic Weight of Chlorine: an Attempt to Determine the Equivalent of Chlorine by Direct Burning with Hydrogen." By Prof. H. B. Dixon, F.R.S., and E. C. Edgar.

In the whole of nine experiments described by the authors 9.1786 grams of hydrogen combined with 323.0403 grams of chlorine; hence the equivalent weight of chlorine, calculated in mass, is 35.195.

The number obtained for the atomic weight of chlorine is appreciably higher than that calculated by F. W. Clarke from the previous determinations, and is slightly higher than Stas's value:—

Clarke's calculation	Stas	Dixon and Edgar
35.179	35.189	35.195
35.447	35.457	35.463

H = 1
O = 16

G. P. Baxter quotes the value 35.467 as being obtained by Richards and Wells for the atomic weight of chlorine—a number slightly higher than the authors'.

Chemical Society, June 1.—Prof. R. Meldola, F.R.S., president, in the chair.—The constituents of the seeds of *Hydnocarpus Wightiana* and of *Hydnocarpus anthonimintica*. Isolation of a homologue of chaulmoogric acid: F. B. Power and M. Barrowcliff. The authors found that the oils of these two seeds very closely resemble chaulmoogra oil, consisting chiefly of the glycerol esters of chaulmoogric acid and a lower homologue of the same series, which has the formula $C_{18}H_{28}O_2$, and is designated *hydnocarpic acid*. The oil of *Hydnocarpus Wightiana* appears to contain also a very small proportion of an acid or acids belonging to the linolic or linolenic series.—The constituents of the seeds of *Gynocardia odorata*: F. B. Power and M. Barrowcliff. The oil expressed from the seeds was found to consist of the glycerol esters of linolic acid or isomerides of the same series, palmitic acid, linolenic and isolinolenic acids, and oleic acid.—The relation of ammonium to the alkali metals. A study of

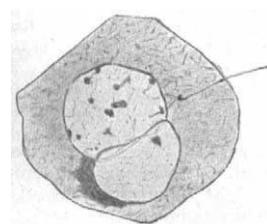


FIG. 6.—Slightly later stage in the spermatid of man, with centrosomes and tail.

ammonium magnesium and ammonium zinc sulphates and selenates: A. E. H. **Lutton**. With regard to molecular volume, the topic axes, and molecular refraction, the ammonium salt of any double salt group of the series behaves almost exactly like the rubidium salt.—Camphoryl-azoimide: M. O. **Forster** and H. E. **Fierz**.—Influence of substitution on the formation of diazoamines and aminoazo-compounds, part iii., azo-derivatives of the symmetrically disubstituted primary metadiamines: G. T. **Morgan** and W. O. **Wootton**. The following new diamines have been prepared and characterised:—6-chloro-4-nitro-m-phenylenediamine, 6-bromo-4-nitro-m-phenylenediamine, and di-iodo-m-phenylenediamine.—Diazoderivatives of monoacylated paradiamines: G. T. **Morgan** and F. M. G. **Micklethwait**.—The significance of optical properties as connoting structure; camphor-quinone-hydrazone-oximes: a contribution to the theory of the origin of colour and to the chemistry of nitrogen: H. E. **Armstrong** and W. **Robertson**.—Solubility as a measure of the change undergone by isodynamic hydrazones. (i) Camphorquinonephthalhydrazone; (2) acetaldehyde-phenylhydrazone: W. **Robertson**.—The design of gas-regulators for thermostats: T. M. **Lowry**. Two new patterns are described. By means of one of these the temperature of a bath of water may be maintained within $\pm 0^{\circ}$ or C. during several weeks, the average fluctuation being about $\pm 0^{\circ}002$ C.—The constitution of barbaloin, part i.: H. A. D. **Jowett** and C. E. **Potter**. The authors have made a number of analyses and molecular weight determinations of carefully purified barbaloin and tribromobarbaloin, and their results agree best with Tilden's formula.—Influence of substitution on the formation of diazoamines and aminoazo-compounds, part iv., 5-bromo-as(4)-dimethyl-2-4-diaminotoluene: G. T. **Morgan** and A. **Clayton**.—The action of magnesium methyl iodide on pinenitrosochloride: W. A. **Tilden** and J. A. **Stokes**. Two principal products are obtained, the oxime $C_{10}H_{15}(CH_3)_2 : NOH$ (m.p. 193°), and a base $C_{10}H_{16}N(CH_3)_2$ (m.p. 122°).—The action of hypobromous acid on piperazine: F. D. **Chattaway** and W. H. **Lewis**.—Racemisation phenomena during the hydrolysis of optically active menthyl and bornyl esters by alkali: A. **McKenzie** and H. B. **Thompson**.—Estimation of hydrogen peroxide in the presence of potassium persulphate: J. A. N. **Friend**. The author now shows that if a slight excess of permanganate is rapidly added from a burette to the mixture of peroxide and persulphate, and the excess of permanganate estimated iodometrically with thiosulphate, accurate results may be obtained in the presence of any weight of potassium persulphate not exceeding 0.08 gram.—Some oxidation products of the hydroxybenzoic acids and the constitution of ellagic acid: A. G. **Perkin** and M. **Nierenstein**.—The reduction of isophthalic acid, part ii.: W. L. **Goodwin** and W. H. **Perkin**, jun. The authors describe a convenient method for the preparation and separation of the *cis*- and *trans*-modifications of hexahydroisophthalic acid.—Complex ammonium antimonious halides: R. M. **Caven**.—The replacement of hydroxyl by bromine: W. H. **Perkin**, jun., and J. L. **Simonsen**. The authors find that good results are obtained when the acetate of the alcohol is heated at about 150° with a solution of hydrogen bromide in acetic acid (saturated at 0°).—The ethereal salts and amide of dimethoxypropionic acid derived from *d*-glyceric acid: P. F. **Frankland** and N. L. **Gebhard**.—The influence of phosphates on the fermentation of glucose by yeast juice. Preliminary communication: A. **Harden** and W. J. **Young**. It has previously been shown by the authors that the amount of glucose fermented by a given volume of yeast juice is greatly increased by the addition of boiled and filtered yeast juice. A similar initial rapid evolution of carbon dioxide occurs when a solution of sodium or potassium orthophosphate is added instead of the boiled juice, but in this case no marked prolongation of the fermentation is observed.—A contribution to the study of alkylated glucosides: J. C. **Irvine** and A. **Cameron**.

Linnean Society. June 1.—Prof. W. A. **Herdman**, F.R.S., president, in the chair.—Models of restorations of some extinct Dinosaurs, Ceratosaurus and Diplodocus, also of Ichthyosaurus, Plesiosaurus, Scelidosaurus, and Stego-

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saurus: H. E. H. **Smedley**.—Two photographs of a palm, *Corypha elata*: J. F. **Waby**. At the general meeting of June 18, 1903, photographs were shown of two specimens of equal age; one had normally flowered, fruited, and died; the other, instead of flowers, had thrown up a secondary central growth of leaves. The information now sent completes the record; the survivor in its turn had flowered and died, the inflorescences being developed from the secondary crown of foliage. On being cut down it proved to be 68 feet in height, diameter at base 3 feet 6 inches, diameter at base of secondary growth, 1 foot 10 inches. The secondary growth itself was 4 feet in height, and the height of the spadix an additional 20 feet, 5 feet of this being bare stem, the remaining 15 feet crowded with twenty-nine huge branches. The crop of fruit numbered more than 51,000 and weighed half a ton, most of the spadices being abortive.—The botany of Gough Island, part ii., the cryptogams, exclusive of the ferns and unicellular algae: R. N. **Rudmose Brown**. The president reminded the meeting that when part i. of this paper was read on May 4 it had been suggested that a visit to the Tristan da Cunha group might form part of the programme of the Cape session of the British Association. The matter had, however, received so little outside support that the project had been abandoned.

Geological Society, June 2.—Dr. J. E. **Marr**, F.R.S., president, in the chair.—On the igneous rocks occurring between St. David's Head and Strumble Head (Pembrokeshire): J. V. **Elden**. The author finds that the contemporaneous lavas of the Llanrian area agree generally in character with the eruptive rocks of apparently Ordovician age in the Strumble Head and Prescelly districts. These are all of an essentially acid type. The intrusive rocks of the area are of later date, and belong to three distinct types:—(1) the gabbros and diabases of the Strumble Head area; (2) the norites and associated rocks of St. David's Head and the surrounding district; and (3) the lime-bostonites and porphyrites of the Abercastle-Mathry district. Detailed petrographical descriptions of the different types are given, accompanied in many cases by analyses and comparisons with corresponding or related rocks of other areas.—The Rhætic and contiguous deposits of Glamorganshire: L. **Richardson**. The chief sections in the county described in detail are those at Lavernock (near Cardiff), Barry, Tregyff (near Cowbridge), Quarrella (Bridgend), and Stormy Down. The Sully beds, a name given to the fossiliferous portion of the "Grey Marls" of Etheridge, are determined to belong to the Rhætic series, on account of the fossils that they contain. They are quite distinct from the "Tea-Green Marls," in which fossils have not been observed.—On the occurrence of Rhætic rocks at Berrow Hill, near Tewkesbury (Gloucestershire): L. **Richardson**. About two miles south-east from Chase-End Hill (Malvern Hills) there is a small outlier of Lower Liassic and Rhætic beds, in a basin-shaped area, supported and surrounded by Keuper Sandstone. A detailed section is given, mainly obtained by excavation, and this is compared with the nearest locality where the whole of the Rhætic may be studied, namely, at Wainlode Cliff.

CAMBRIDGE.

Philosophical Society, May 15.—Prof. Marshall Ward, president, in the chair.—Exhibition of lantern slides of fungi: Prof. Marshall **Ward**.—Infection phenomena in various species of Uredineæ: I. P. B. **Evans**.—The abortive development of the pollen in certain cross-bred sweet peas: R. P. **Gregory**. Among the offspring produced by the self-fertilisation of a certain hybrid sweet pea, Mr. Bateson obtained, during 1903, a certain number of individuals the anthers of which were contabescens. The same phenomenon was repeated in 1904, with every indication that the sterility is a character which undergoes segregation in accordance with Mendelian principles. The above paper dealt with the abnormalities observed in the nuclei of the pollen-mother-cells of the sterile plants. The vegetative mitoses are perfectly regular, the first indication of abnormality being observed in the prophase of the heterotype (reduction) division. From this point onwards the distribution of the chromatin becomes more and more irregular, with the result that no normal pollen is pro-

duced. The sterility is confined to the male organs, and the development of the embryo-sac is normal.—Crosses between fully fertile varieties of barley and varieties bearing unisexual and sexless flowers: R. H. **Biffen**.—The seed-bearing habit in the Lyginodendrea: E. A. N. **Arber**. Although the seed (*Lagenostoma*) of Lyginodendron, one of the most fern-like of Upper Palaeozoic plants, is known, there has, so far, been no evidence as to the manner in which the seeds were borne. A new species, *Lagenostoma Sinclairi*, has, however, been recently discovered, in which the seeds are still attached to a highly branched axis, which is of the nature of a compound frond with reduced lamina. In this respect the Lyginodendrea agree with the other known members of the class Pteridospermeæ.—Experiments on penetrating radiation: H. L. **Cooke**. The experiments described are in continuation of a previous research by the author on penetrating radiation. By means of a small portable ionisation vessel the radiation in the Cavendish Laboratory is compared with that on the roof of the building; also when the apparatus is buried in earth, and when deeply submerged in water. A discussion of the results follows.

DUBLIN.

Royal Dublin Society, May 16.—Dr. W. E. Wilson, F.R.S., in the chair.—The influence of water-vapour upon nocturnal radiation: J. R. **Sutton**. The author shows a connection between the rate of cooling of a thermometer exposed between 8 and 10 p.m. near the surface of the ground and the relative humidity of the atmosphere, and points out that his observations will not permit of any such connection between the rate of cooling and the absolute humidity. The observations were made at Kimberley, South Africa.—On floating breakwaters: Prof. J. **Joly**. A description of breakwaters which will not rise and fall to the motion of small waves, and will not transmit them. These breakwaters are suitable for use in the shallower waters of partially protected localities.—The gases liberated on pulverising minerals—monazite: R. J. **Moss**. On reducing Norwegian monazite to powder *in vacuo* gas was obtained in the proportion of nearly 0.04 c.c. per gram of the mineral; 100 volumes of this gas contained:—hydrogen, 45.63 volumes; helium, 7.63; nitrogen, 28.93; oxygen, 7.09; carbon dioxide, 10.67. The nitrogen and oxygen being in atmospheric proportions were probably due to leakage. In addition to those gases a small quantity of water was liberated in the pulverisation of the mineral. Relatively to the helium, the quantity of hydrogen is much greater than was found in gas obtained by the same method from pitchblende.

EDINBURGH.

Royal Society, May 15.—Sir John Murray in the chair.—A new form of bolometer adapted for physiological investigation: Dr. W. **Colquhoun**. By using thin metal gratings of low resistance in a Wheatstone bridge arranged as delicately as possible, the author was able to demonstrate with it the heat produced by the beating of a frog's heart.—The magnetic quality of a Boskovitchian assemblage of molecular magnets: Dr. W. **Peddie**. This paper gave a development of the theory of molecular magnetism which applies to crystals of the cubic system. The close-packed arrangement of centres was adopted, but similar treatment would apply to any other arrangement. The results were applied to the experimental data obtained by Weiss in observations on magnetite. The conclusions were:—(1) the theory is capable of giving a good account of observed phenomena; (2) in Wallerant's formula, which gives the correct mathematical relation between quantities, the quantities which he interprets as magnetisation and external force should be interpreted as internal force and magnetisation respectively. Here "internal force" means the force exerted by the group of molecular magnets. The internal action is completely represented by the quartic surface $x^4+y^4+z^4=1$.—Suggestions towards a theory of electricity based on the bubble atom: J. **Fraser**. This extension of a previous communication on the constitution of matter consists essentially of suggestions without rigid mathematical development. The treatment of conduction was of interest as suggesting a possible model of a dynamical system the properties of which simulate those

of an electric conductor.—The Nudibranchiata of the Scottish National Antarctic Expedition: Sir Charles **Eliot**. The paper contained the description of two new genera and two new species.

MANCHESTER.

Literary and Philosophical Society, April 4.—Prof. W. Boyd Dawkins, F.R.S., president, in the chair.—Portion of a stem of *Sigillaria vascularis* giving off a branch with the structure of *Lepidodendron selaginoides*, thus confirming Dr. Williamson's conviction of the identity of these two Coal-measure plants: Prof. F. E. **Weiss** and J. **Lomax**.—Notes on the Wilkinsons, ironmasters: F. **Nicholson**.

April 18.—Prof. W. Boyd Dawkins, F.R.S., president, in the chair.—A new method of producing coloured diffusion bands: H. **Stansfield**. One surface of a piece of plate glass, rendered diffusive by spoiling the polish or coating it with a diffusing film of resin or butter, was fixed so as to be nearly in contact with the reflecting surface of a polished silver mirror, the surfaces being separated at the corners by a single thickness of stamping. Greater dispersion of the colours is obtained in this way than by breathing on the glass surface of a silvered mirror, as the air film can be made much thinner than the mirror glass.—Notes on chlorine: C. H. **Burgess** and D. L. **Chapman**.

May 2.—On some constituents of Manchester soot: Prof. E. **Knecht**. The author pointed out at the outset that smoke and soot did not consist of carbon alone, as was popularly supposed, and went on to show that the soot obtained from the "fat" coal which is used in the Manchester district contains at least 50 per cent. of substances other than carbon. A variety of interesting products were shown which had been isolated from an average sample of household soot collected in Manchester. These included snow-white samples of ammonium chloride, ammonium sulphate, calcium sulphate, and a beautifully crystallised paraffin hydrocarbon which was similar in properties and composition to one which was known to exist in bees' wax. The amount of heavy hydrocarbon oils contained in our household soot was found to be no less than 13 per cent. From the brown coloured acid constituents the author had prepared a dye-stuff which was capable of producing absolutely fast shades of brown on cotton, dyed samples of which were shown. Comparative analyses of samples of soot collected in London and in Prague showed that these (especially that from Bohemian lignite) were much cleaner than the Manchester soot. After commenting on the drawbacks attendant on the presence of soot in our atmosphere, chiefly due to household fires, the lecturer expressed the opinion that no amelioration could be hoped for unless the use of more efficient fire-grates could be made compulsory.

PARIS.

Academy of Sciences, June 3.—M. Troost in the chair.—Observations on the methods employed in calorimetry, with especial reference to the determination of the heat of combustion of organic compounds: M. **Berthelot**. A polemical paper in reply to Julius Thomsen. The author strongly supports the accuracy of the results obtained by the calorimetric bomb as against the combustion under atmospheric pressure.—On the dynamics of the electron: H. **Poincaré**. A discussion of a recent paper by Lorentz on electromagnetic phenomena in a system moving with any velocity smaller than that of light.—Photographs in colour of the spectrum, negative by transmission: G. **Lippmann**. In the case of photographs on bichromatised gelatin films it has been hitherto necessary to moisten the film each time it is desired to observe the colours. By alternate treatment with solutions of potassium iodide and silver nitrate the colours become permanent and visible after drying.—The preparation and properties of the chloride and bromide of thorium: H. **Moissan** and M. **Martinsen**. The chloride of thorium was prepared by the action of well dried chlorine on metallic thorium prepared in the electric furnace. Owing to the extremely hygroscopic properties of the thorium chloride it was impossible to transfer it mechanically to a vessel for analysis, and it was therefore volatilised directly into a

glass tube in a current of dry hydrogen. The purity was determined by analysis, the melting point being found to be 720° C.—On the transmission by ticks of spirillosis and of bovine piroplasmosis: A. **Laveran** and M. **Vallée**. A specimen of the larva of *Rhipicephalus decoloratus* forwarded by M. Theiler from Pretoria, and stated by him to be the cause of the transmission of spirillosis in cattle, was allowed to act upon a healthy cow, with results entirely confirming those of M. Theiler.—The evolution of the Tertiary mammals: Charles **Depéret**.—Magnetic observations at Tananarivo: R. **Colin**. Tables are given showing the results of measurements of magnetic declination, inclination, and the horizontal component taken weekly between May, 1904, and April, 1905.—The principles of anallagmatic geometry: A. **Demoulin**.—Some new experiments on the lifting power of the helix "M. Léger" at the oceanographic museum at Monaco: M. **Léger**. The apparatus proved capable of lifting a man, together with a weight representing its motor and the petrol necessary for an experiment of one hour's duration.—A new mode of application of the Pitot-Darcy tube to the measurement of the velocity of water in pipes under pressure: H. **Bellet**. The modification suggested is the use of a two-fluid manometer, water and a liquid of density slightly greater or less than that of water; carbon bisulphide tinted with iodine gave the best results.—The magnetic properties of the simple element of pyrrhotite: Pierre **Weiss**.—On a property of the tin-aluminium, bismuth-aluminium, and magnesium-aluminium alloys: H. **Pécheux**.—The action of oxygen upon caesium-ammonium: E. **Rengade**. The rapid oxidation of caesium-ammonium dissolved in an excess of ammonia gives the oxides Cs_2O_2 , Cs_2O_3 , and Cs_2O_4 , all in microscopic crystals. If the oxygen is added gradually a secondary reaction takes place, the amide and hydroxide of caesium being formed.—Pyranic phenols: R. **Fosse** and A. **Robyn**.—On a new reagent for aconitine: E. P. **Alvarez**.—On the expansion and density of some gases at high temperatures: the application to the determination of their molecular weights: Adrien **Jacquierod** and F. Louis **Perrot**. Figures are given for air, oxygen, carbon monoxide, and carbon dioxide on the basis of the nitrogen thermometer at the melting point of gold. The molecular weights based on the density determinations at 1067° C. give for CO and CO_2 results agreeing within 1/300th with the results of analysis; for nitrogen, the value found agrees with the atomic weight, 14.008.—Osmotic pressure in colloidal solutions: J. **Duclaux**.—On the coagulation of starch: A. **Fernbach** and J. **Wolf**.—On methæmoglobin and its fluorine combination: J. **Ville** and E. **Derrien**. The authors maintain the accuracy of their results against the criticism of Piettre and Vila.—Protagon and the cerebrines and cerebric acid preexisting in the nervous tissue: N. A. **Barbieri**. The author regards the protagon of Liebricht as a mixture of cerebrin and the cerebric acid of Fremy.—On the effects of annular decortication: Leclerc **du Sablon**.—On the results obtained by the observation of arable earths in thin plate: A. **Delage** and H. **Lagatu**. A reply to various criticisms on an earlier paper.—Researches on the ethnography of the Dravidians: Louis **Lapique**.—On the evolutions of the sexual forms in the soft-water Nereids: Ch. **Gravier**.—The simultaneous contrast of colours: A. **Polack**. The phenomenon of the simultaneous contrast of colours appears even when accidental images by the movement of the eye are completely eliminated. Under these conditions the effect of contrast depends on the state of accommodation of the eye.—On the heats of combustion and chemical composition of the nervous and muscular tissues of the guinea-pig, considered as a function of the age of the animal: J. **Tribot**.—On a new method of protection against the Röntgen rays: J. **Bergonié**. The principle of the method consists in placing the whole of the arrangements about the patient above the horizontal plane prolonging the anti-kathode, and below this plane the patient himself. The method has proved successful after six months' use.—On the denomination of the supposed agent in syphilis: Paul **Vuillemin**.—The presence of methane in the borings in Lorraine: Francis **Laur**.—Captive balloon ascents carried out over the sea by the Prince of Monaco in April: H. **Hergesell**.

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DIARY OF SOCIETIES.

THURSDAY, JUNE 15.

LINNEAN SOCIETY, at 8.—Biscayan Plankton. Part VI. Colloid Radio-laria: Dr. K. N. Wolfenden.—Biscayan Plankton. Part VII. Mollusca: Dr. P. Pelsner.—(1) Longitudinal Nerves and Transverse Veins in Bamboos; (2) Some Indian Undershrubs: Sir D. Brandis, K.C.I.E., F.R.S.—Notes on a Skeleton of the Musk-duck, *Biziura lobata*: W. P. Pycraft.—Exhibitions: *Arum maculatum*, in Relation to Insects (with lantern slides): Rev. J. Gerard, S.J.

FRIDAY, JUNE 16.

PHYSICAL SOCIETY, at 8.—On the Ratio between the Mean Spherical and Mean Horizontal Candle-power of Incandescent Lamps: Prof. J. A. Fleming, F.R.S.—The Electrical Conductivity of Flames: Dr. H. A. Wilson.—Contact with Dielectrics: R. Appleyard.—The Pendulum Accelerometer, an Instrument for the Direct Measurement and Recording of Acceleration: F. Lanchester.—A New Form of Pyknometer: N. V. Stanford.—Exhibition of a Refractometer: R. Appleyard.

MALACOLOGICAL SOCIETY, at 8.—Lecture on the Prosobranchiate Mollusca: J. E. S. Moore.—On the Extension of the Genus *Macrochlamys* to the Island of Mauritius: Lieut.-Col. H. H. Godwin-Austen.—Mollusca of the Porcupine Expeditions, Supplemental Notes, Part II.: E. R. Sykes.—On a Small Collection of Mollusca from Tierra del Fuego: E. A. Smith.—On two Miocene Gastropods from Roumania: R. Bullen Newton.—Revision of the New Zealand Patellidae, with Descriptions of a New Species and Subspecies: Henry Suter.—The Conchological Writings of Captain Thomas Brown: C. Davies Sherborn.

TUESDAY, JUNE 20.

ANTHROPOLOGICAL INSTITUTE, at 8.15.—Notes on a Recently Discovered British Camp near Wallington: N. F. Robarts.—Prehistoric Remains in West Cornwall: A. L. Lewis.

WEDNESDAY, JUNE 21.

ROYAL MICROSCOPICAL SOCIETY, at 8.—Theories of Microscopical Vision (second paper): A. E. Conrady.—The Tubercle Bacillus: Edward M. Nelson.

GEOLoGICAL SOCIETY, at 8.—The Relations of the Eocene and the Cretaceous in the Esna-Aswan Reach of the Nile Valley: H. J. L. Beadnell.—A Contribution to the Study of the Glacial (Dwyka) Conglomerate in South Africa: E. T. Mellor.—On New Oolitic Strata in Oxfordshire: E. A. Walford.—The Causes of Variegation in Keuper Marl and other Calcareous Rocks: Dr. G. T. Moody.

ROYAL METEOROLOGICAL SOCIETY, at 4.30.—Normal Electrical Phenomena of the Atmosphere: G. C. Simpson.—Two New Meteorological Instruments: (1) Automatic Pole Star Light Recorder, and (2) The Ombroscope: S. P. Fergusson.

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